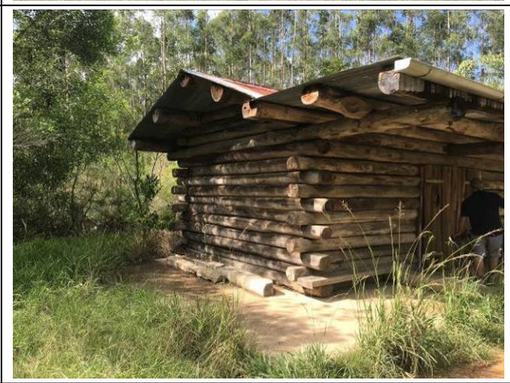
Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 1 DP611556	Sawmill 2	Electric powered sawmill. Machinery and transport track still in place. Some old drums, timber, building materials, general rubbish, inert products and tyres. Staining evident.	Yes.	Metals, OCPs, TRHs, PAHs.	
Lot 32 DP755714	Dip	Cattle dip that Mr Peter Van Lieshout advised was decommissioned *circa* 1998, with soil removal and potentially backfilled with concrete. The NSW Department of Primary Industries does not have any records of remediation nor backfilling with concrete. PE was unable to view the dip site due to thick lantana among plantation trees limiting access on the day.	Yes.	Metals, OCPs.	-
	Camp amphitheatre 2	Camping ground with large timber and metal 'amphitheatre' – communal shelter. Composting toilet and shower, and associated water tank.	No.	N/A.	
Lot 1 DP390311	Log cabin	Concrete slab. Log construction with metal roof.	No.	N/A.	

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 1 DP390311	Dam 3	No pump or other signs of potential contamination sighted.	Possible contaminant sink (sediment and water to be assessed).	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs and herbicides.	
Lot 5 DP582299	Lean-to	Open sided timber and metal structure adjacent to Scott's lookout. Heavily vegetated. Detailed inspection could not be complete.	Possible.	Inspection after clearing required.	
	Camp amphitheatre 4 and 5	Camping grounds with large timber and metal 'amphitheatres' – communal shelters. Composting toilets and associated water tanks, camp fires, seating.	No.	N/A.	-
Lot 34 DP755714	House 3	Timber clad and metal roof with detached cottage.	Low risk though will require investigation as it is located in a proposed dwelling cluster area.	Lead paint, asbestos as constructed prior to 1987.	-
	Shed 4	Metal construction. Half concrete floor with mild staining. Half exposed soil with tractor, drums and other typical rural shed contents. Timber outhouse.	Yes.	Metals, TRHs, BTEXN, PAHs, OPPs, herbicides.	

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 34 DP755714	Shed 5	Small metal shed with timber floor. Building materials within.	Yes.	Metals, TRHs, BTEXN, PAHs, OPPs, herbicides.	
	Shed 6	Metal shed with adjacent raised garden beds in small green-house type structure.	Yes.	Metals, TRHs, BTEXN, PAHs, OPPs, herbicides.	
	Dam 1 and Dam 1 pump	Small structure where dam pump would be posited (no pump present during inspection). Some soil staining. No other indicators of potential contamination.	Yes – staining on ground and dam as possible contaminant sink (sediment and water to be assessed).	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs and herbicides.	

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 34 DP755714	House 6	Timber with metal roof.	Low risk though will require investigation as it is located in a proposed dwelling cluster area.	Lead paint, asbestos as constructed prior to 1987.	
	House 7 and Shed 10	Metal construction on concrete slab with attached open shed. General rubbish present in shed and in general area. Tractor. Log splitter. Fireplace. Old water tanks.	Low risk though will require investigation as it is located in a proposed dwelling cluster area.	Metals, TRHs, BTEXN, PAHs, OPPs, herbicides.	
	Shed 9	Appeared to be partly a disused chicken shed. Metal with earth floor. Some inert building materials and rubbish.	Yes.	Metals, TRHs, BTEXN, PAHs, OPPs, herbicides.	
	Amenities 2	Raised toilet block.	No.	N/A.	-

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 34 DP755714	Shed 11	Small, metal construction with earth floor. Empty. Old shower. Possible packing shed.	Yes.	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs, asbestos, herbicides.	
	Shed 12	Small, metal construction with timber / plywood floor. Building materials, rubbish, chemical/fuel container. Possible packing shed.	Yes.	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs, asbestos, herbicides.	
	Clearing 2	Open area with slashed grass and no trees. No visual signs of potentially contaminating activities.	No.	N/A.	-
	Other dam 4	Not inspected.	Possible contaminant sink and staining if pump is/was present.	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs and herbicides.	-
Lot 4 DP737440	House 4	Metal 'shack' with adjoining caravan. Rubbish piles.	Low risk though rubbish must be disposed.	Unlikely given construction after 1987.	

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 4 DP737440	Cattle yard 3	Area adjoining House 4. Timber fences. Relatively small. Currently used as a pig pen.	Low risk, though may warrant low density sampling.	Metals, OCPs.	
	Shed 7	Metal, earth floor. Rubbish, barrels and miscellaneous items.	Yes.	Metals. TRHs, BTEXN, PAHs, OPPs, herbicides.	
	Shed 8	Metal, part concrete floor, part earth floor. Chemical / weed spray tank for tractor. Modern mobile sawmill (petrol or diesel powered).	Yes.	Metals. TRHs, BTEXN, PAHs, OPPs, herbicides.	

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 4 DP737440	Shed 8	As above.	Possible contaminant sink.	Metals, TRHs, BTEXN, PAHs, OPPs and herbicides.	
	Dam 4 – Dam 7	No pumps or other signs of potential contamination sighted.	Possible contaminant sink (sediment and water to be assessed).	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs and herbicides.	-
	Amenities 1 and Games Room	Timber and metal construction. Games room on concrete slab. For campo accommodation use.	No.	N/A.	
	Private property south of Dam 6	Could not be accessed / inspected.	Unknown.	Unknown.	-
	House 5	Timber and metal construction.	Low risk and may not warrant investigation if ongoing use is proposed.	Possibly lead paint and asbestos depending on age.	-
	Cabin 1 and Cabin 2	Timber and metal construction. Accommodation for hire.	No.	N/A.	-
	AST 1	~1,000 L AST with refuelling hose. Aged. Two barrels with one attached fluid pump. Located on a concrete slab.	Yes.	Lead, TRHs, BTEXN, PAHs.	
	Clearing 3	Slashed grass area cleared of trees. No signs of potentially contaminating activities.	No.	N/A.	-

Allotment	Feature	Description	AoPC	PCoC	Photograph
Lot 4 DP737440	Lookout / camp site	Slashed grass area cleared of trees. No signs of potentially contaminating activities.	No.	N/A.	-
	Water tank 1	Water tank at top of hill.	No.	N/A.	-
	Other dam 3	Not inspected.	Possible contaminant sink and staining if pump is/was present (sediment and water to be assessed).	Metals, TRHs, BTEXN, PAHs, OCPs, OPPs and herbicides.	-
Various (refer Figure 2)	Plantations	Heavily timbers eucalypt plantation	Yes, requires preliminary assessment in dwelling areas located down gradient.	Herbicides.	-

5 PRELIMINARY CONCEPTUAL SITE MODEL

The NEPM details that a conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM inputs are defined in Table 11 and depicted in Appendix A, Figure 6. The CSM draws on the outcomes of previous sections.

Table 11. Preliminary CSM inputs.

Component	Site specific details
Built environment including underground infrastructure	Sparse housing, sheds and storage areas. Minimal localised underground infrastructure. Proposed structures are free-standing homes in clusters, potentially raised. Municipal underground infrastructure (such as drinking water) is unlikely.
Physical environment	Refer to Section 2.1 and 2.3.
Known and potential sources of contamination	Refer to Table 10.
Environmental media of concern	Surface soils, potentially underlying soil if significant point source contamination has impacted the site surface, and dam waters and sediment. Groundwater impacts unlikely given the physical environment.
Contaminant migration pathways	Laterally through more permeable upper soils. Down topographic gradient to dams and/or waterways.
Potential receptors	Site residents / workers through ingestion or dermal contact with surface soils. Site residents / workers through ingestion or dermal contact with dam waters and sediment.

6 CONCLUSION AND RECOMMENDATIONS

The PSCA has been undertaken to identify potential contaminated land constraints to the proposed development of up to 393 eco homes in various clusters across the site. Investigation methods included a site inspection, information gathering and desktop assessment.

The aerial photographs described in Table 7 and the land uses in Table 10 outline the chronological activities undertaken at the site, and the associated AoPC and PCoC. Figures 3 – 5 in Appendix A show how the locations of these AoPC correspond with the proposed dwelling cluster locations (in their current iteration). No evidence of broad cropping (such as bananas) was identified in aerial photographs, topographic mapping, discussions with the site owner and occupants nor other forms of available information. However, eucalyptus plantations within the site started at least as early as 1997 and may have involved broad application of herbicides in the pre-planting phase.

Each of the AoPC with identified risks (Table 10) will need to be quantitatively assessed through a detailed site investigation (DSI) that targets the associated PCoC in a sampling strategy suited to the cluster size and layout, the potential contaminant source(s) and contaminant types. In line with the contaminated land process prescribed under the NEPM and prior to the commencing DSI works, Data Quality Objectives (DQOs) must be prepared to ensure that any data collected is of sufficient quality and quantity to support defensible decision making. As part of the DQOs, the sampling strategies and methods to be applied must be formulated in a Sampling Analysis Quality Plan (SAQP). This can be submitted to TSC to inform the regulator of the proposed works.

The DSI shall determine whether the dwelling clusters are suitable for the proposed residential land use, or whether any remediation will be required to meet the relevant land use criteria. Should remediation works be required, a Remedial Action Plan (RAP) must be prepared to outline the remediation strategy, associated health and safety and environmental controls, and validation program that will be implemented.

It is noted that there is the possibility that other minor areas of concern could be identified through further detailed investigation of the site. For example, additional pumps servicing dams and/or creeks may be identified and will require investigation.

PE is able to address all phases of the contaminated land assessment process and, notwithstanding other planning considerations, can assist with final siting of the dwelling clusters to lower risk locations that may justify reductions in the investigation scope.

Whilst there is a requirement to conduct sampling and analysis as part of the next detailed stage of works, it is likely that the proposed dwelling density can be met via either site remediation and/or relocation of dwelling sites to other areas of the site.

7 REFERENCES

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APPENDICES

APPENDIX A: FIGURES AND DBYD PLANS

LEGEND

- Site boundary
- Individual allotment boundaries
- Easements / roads
- Allotments with forestry rights (timber) to the Forestry Commission of NSW

All locations indicative only

2 DP582300
71.71 ha

1 DP390311
162.27 ha

5 DP582299
134.1 ha

31 DP744714
88.03 ha

34 DP755714
47.04 ha

3 DP755714
37.94 ha

4 DP737440
90.82 ha

1 DP611556
5.06 ha

32 DP755714
125.45 ha

35 DP755714
30.76 ha

2 DP611556
122.04 ha

121 DP134446
158.17 ha

1 DP1183098 3.02 ha

Kyogle Road

22 DP755714
46.54 ha

33 DP755714
9.90 ha

11 DP1194471
126.60 ha

19 DP755714
48.56 ha

20 DP755714
177.25 ha

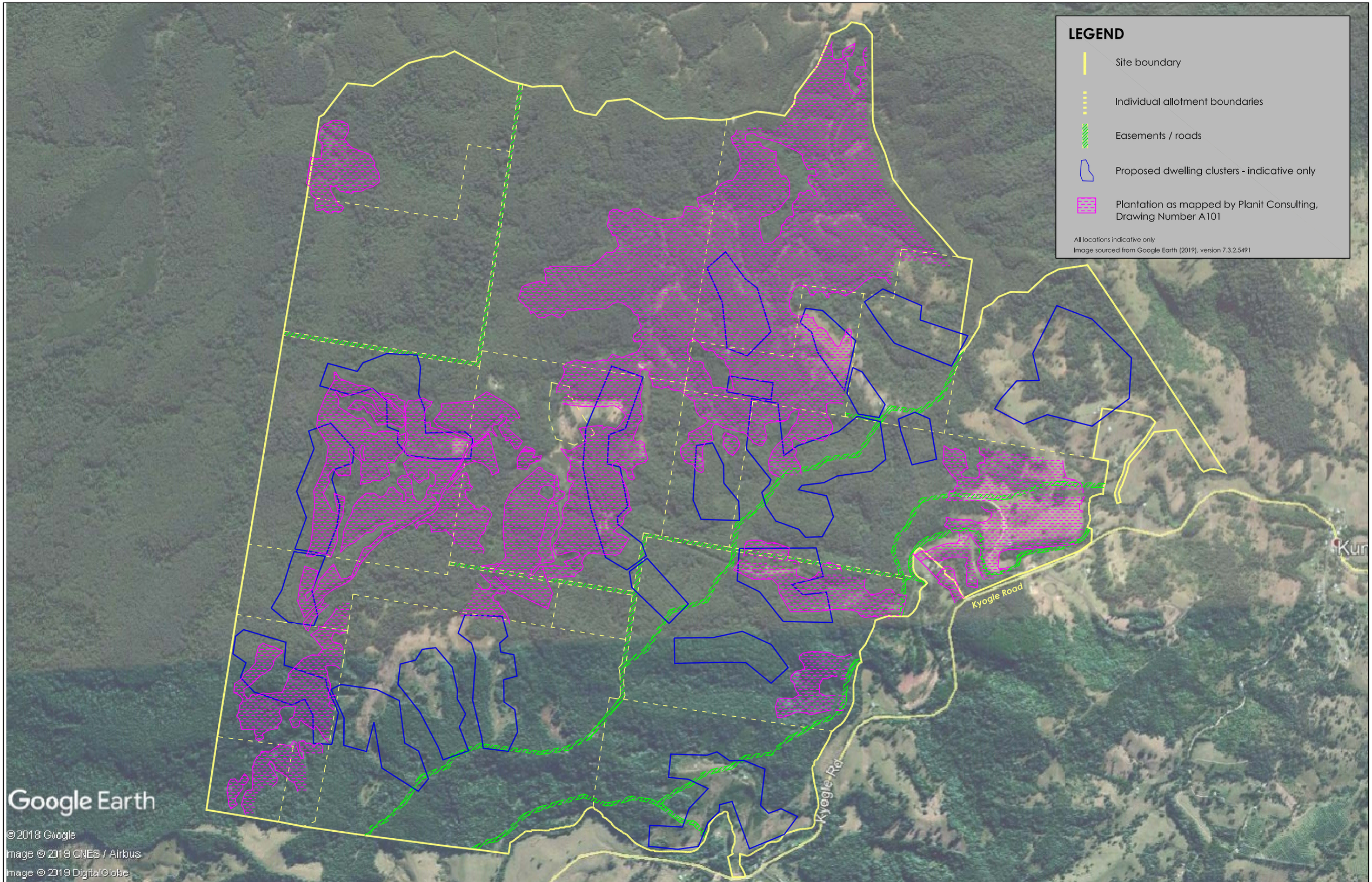
2 DP1148316
81.51 ha

8 DP755714
16.19 ha

500 m

Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE AS SHOWN		Drawing number: FIGURE 1	PRECISE ENVIRONMENTAL Consulting Environmental Scientists
					Drawing version: A	
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: AS SHOWN	Drawn by: LM	Reviewed by: CB	Drawing title: SITE AND ALLOTMENT LAYOUT	N
			Date drawn: 14.03.2019	Approved: LM		

Unit 7 / 14 Fremantle Street, Burleigh Heads, Qld, 4220
PO Box 4424, Robina Town Centre, Qld 4230
Ph: (07) 5593 7848 Fax: (07) 5593 7020
mail@preciseenvironmental.com.au



500 m

Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE - REFER FIGURE 1		Drawing number: FIGURE 2 Drawing version: A	PRECISE ENVIRONMENTAL Consulting Environmental Scientists Unit 7 / 14 Fremantle Street, Burleigh Heads, Qld, 4220 PO Box 4424, Robina Town Centre, Qld 4230 Ph: (07) 5593 7848 Fax: (07) 5593 7020 mail@preciseenvironmental.com.au
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: AS SHOWN	Drawn by: LM Date drawn: 14.03.2019	Reviewed by: CB Approved: LM	Drawing title: SITE LAYOUT AND PLANTATION AREA	N

LEGEND

- Site boundary
- AoPC
- Other areas of interest
- Proposed dwelling clusters - indicative only

All locations indicative only
Image sourced from Google Earth (2019), version 7.3.2.5491

Cattle dip (offsite)
Camp ampitheatre 5
Camp ampitheatre 4
Landing strip
Scott's lookout
Lean to
Other dam 4
Clearing 2
Shed 11
Shed 12
Shed 10
House 7
Shed 9
House 6
Camp ampitheatre 3
Log cabin
Dam 3
Camp ampitheatre 2
Dam 1
Dam 2 pump
Shed 5
Shed 6
House 3
Shed 4
Saw mill 2
Cropping area
Hay shed
Cattle dip
AST 1
Refer to Figure 4
Houses and sheds not inspected - access not granted
Dam 2 pump
Camp ampitheatre 1
Dam 2
Camp 6
Piggery
Other dam 1
Mill Rd
Rd
Rd
Rd
Google Earth
DigitalGlobe
500 m

Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE - REFER FIGURE 1		Drawing number: FIGURE 3	PRECISE ENVIRONMENTAL Consulting Environmental Scientists
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: AS SHOWN	Drawn by: LM	Reviewed by: CB	Drawing version: A	Unit 7 / 14 Fremantle Street, Burleigh Heads, Qld, 4220 PO Box 4424, Robina Town Centre, Qld 4230 Ph: (07) 5593 7848 Fax: (07) 5593 7020 mail@preciseenvironmental.com.au
			Date drawn: 14.03.2019	Approved: LM	Drawing title: AoPC IN NORTHWEST OF SITE	N

LEGEND

- Site boundary
- AoPC
- Other areas of interest
- Proposed dwelling clusters - indicative only

All locations indicative only
Image sourced from Google Earth (2019), version 7.3.2.5491

Refer to Figure 3

Other dam 3

House 5

Games room and amenities

Cabin 1 and 2

AST 2

Dam 4

Dam 5

Cattle yard 3

Clearing 3

Dam 6

Water tank 1

Shed 7

House 4

Shed 8

Lookout

Dam 7

Private property - no access

Other dam 2

Kyogle Rd

House 2

250 m

Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE - REFER FIGURE 1		Drawing number: FIGURE 4	PRECISE ENVIRONMENTAL Consulting Environmental Scientists
					Drawing version: A	
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: AS SHOWN	Drawn by: LM	Reviewed by: CB	Drawing title: AoPC IN EAST OF SITE	N
			Date drawn: 14.03.2019	Approved: LM		

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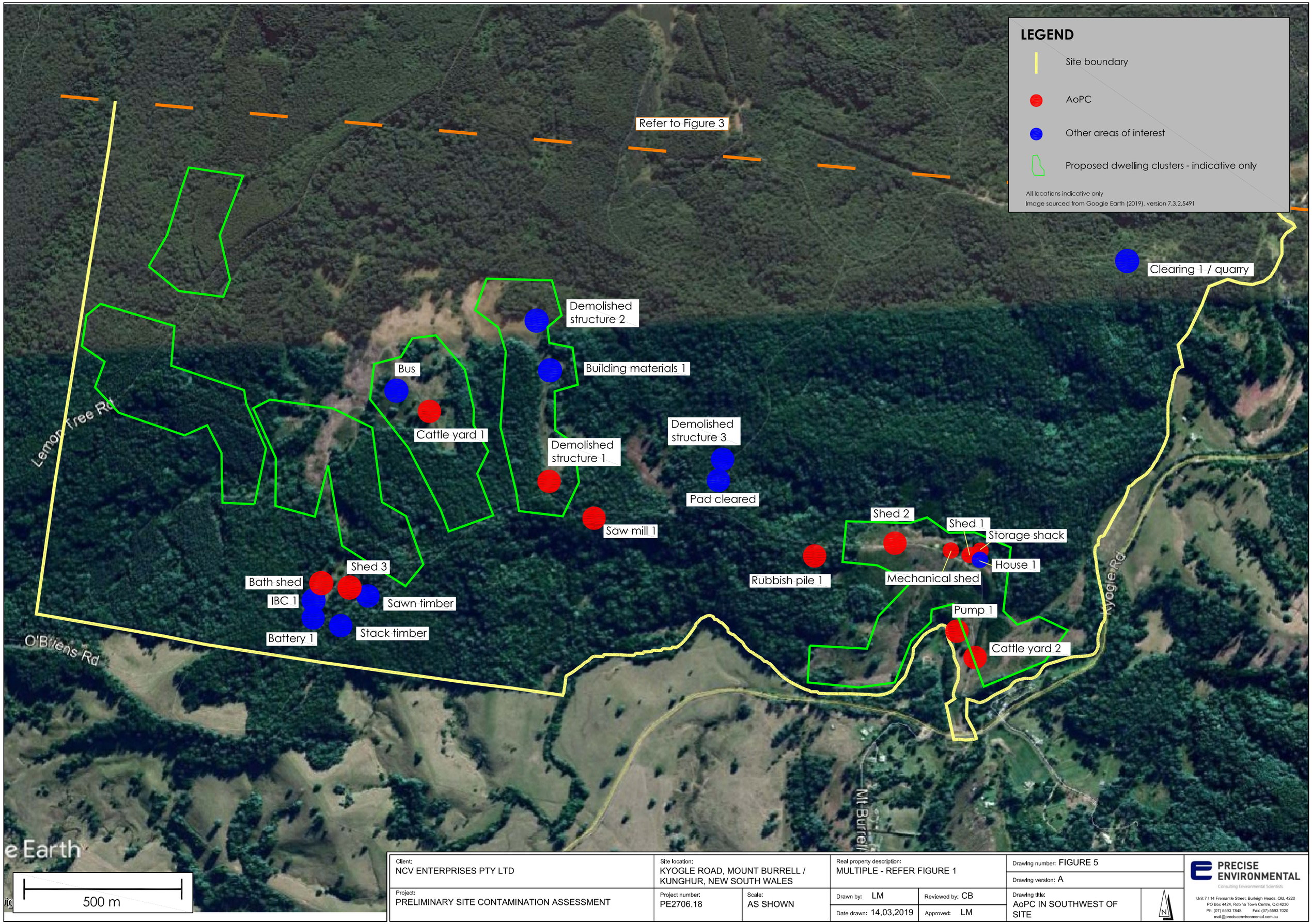
mail@preciseenvironmental.com.au



Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE - REFER FIGURE 1		Drawing number: FIGURE 5	PRECISE ENVIRONMENTAL Consulting Environmental Scientists
					Drawing version: A	
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: AS SHOWN	Drawn by: LM	Reviewed by: CB	Drawing title: AoPC IN SOUTHWEST OF SITE	N
			Date drawn: 14.03.2019	Approved: LM		

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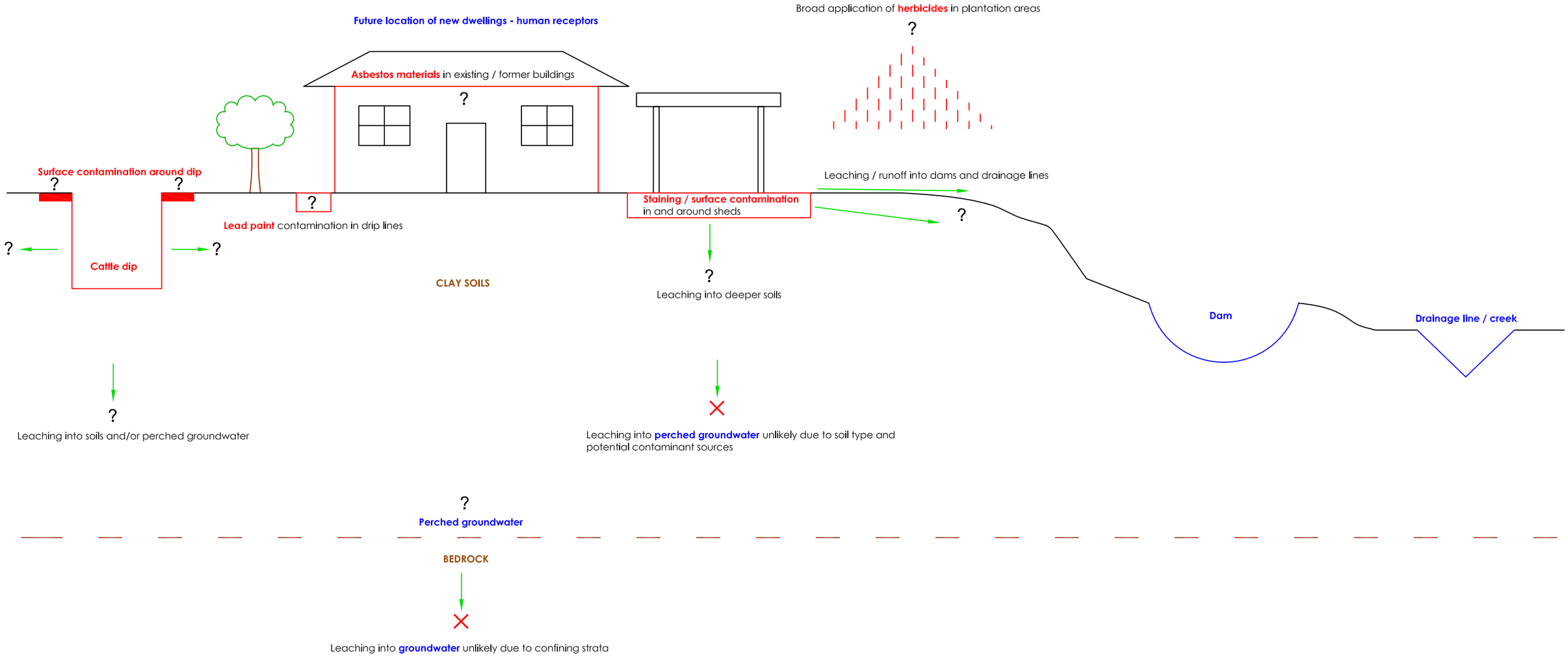
Ph: (07) 5593 7848 Fax: (07) 5593 7020
mail@preciseenvironmental.com.au


Future location of new dwellings - human receptors
Broad application of herbicides in plantation areas
Asbestos materials in existing / former buildings
Surface contamination around dip
Leaching / runoff into dams and drainage lines
Staining / surface contamination in and around sheds
Lead paint contamination in drip lines
Cattle dip
CLAY SOILS
Leaching into deeper soils
Dam
Drainage line / creek
Leaching into soils and/or perched groundwater
Leaching into perched groundwater unlikely due to soil type and potential contaminant sources
Perched groundwater
BEDROCK
Leaching into groundwater unlikely due to confining strata

Client: NCV ENTERPRISES PTY LTD	Site location: KYOGLE ROAD, MOUNT BURRELL / KUNGHUR, NEW SOUTH WALES		Real property description: MULTIPLE - REFER FIGURE 1		Drawing number: FIGURE 6	PRECISE ENVIRONMENTAL Consulting Environmental Scientists
					Drawing version: A	
Project: PRELIMINARY SITE CONTAMINATION ASSESSMENT	Project number: PE2706.18	Scale: NOT TO SCALE	Drawn by: LM	Reviewed by: CB	Drawing title: PRELIMINARY CONCEPTUAL SITE MODEL	N
			Date drawn: 22.03.2019	Approved: LM		

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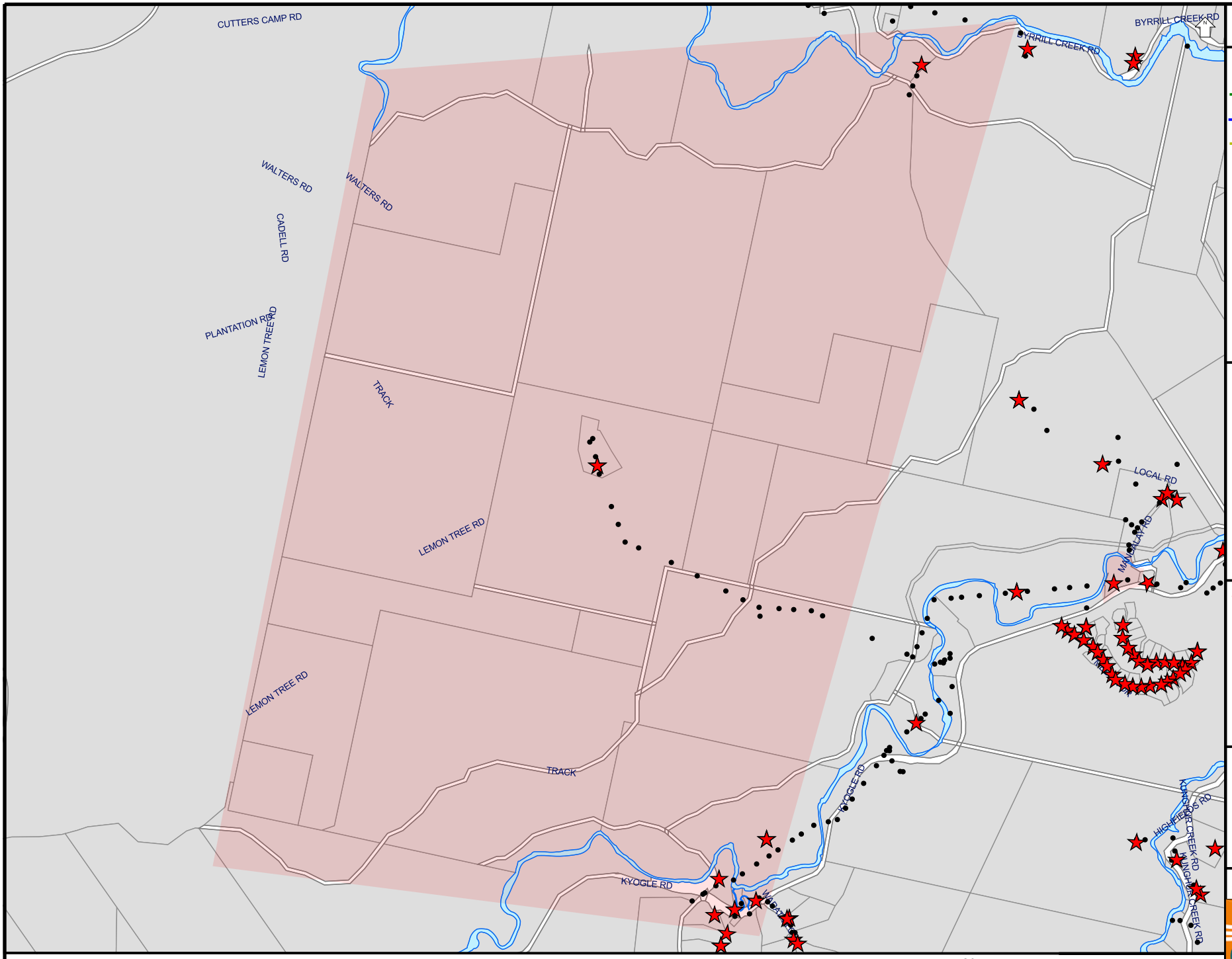
mail@preciseenvironmental.com.au



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- Underground Earth or Wires
- Ground Substation
- Pole
- Cubicle
- Pit
- Area of Interest

Critical Assets

Contact Essential Energy on 13 23 91

- Zone Substation
- Underground Cable
- Underground Fibre

Proposed Works

- Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 15/02/2019

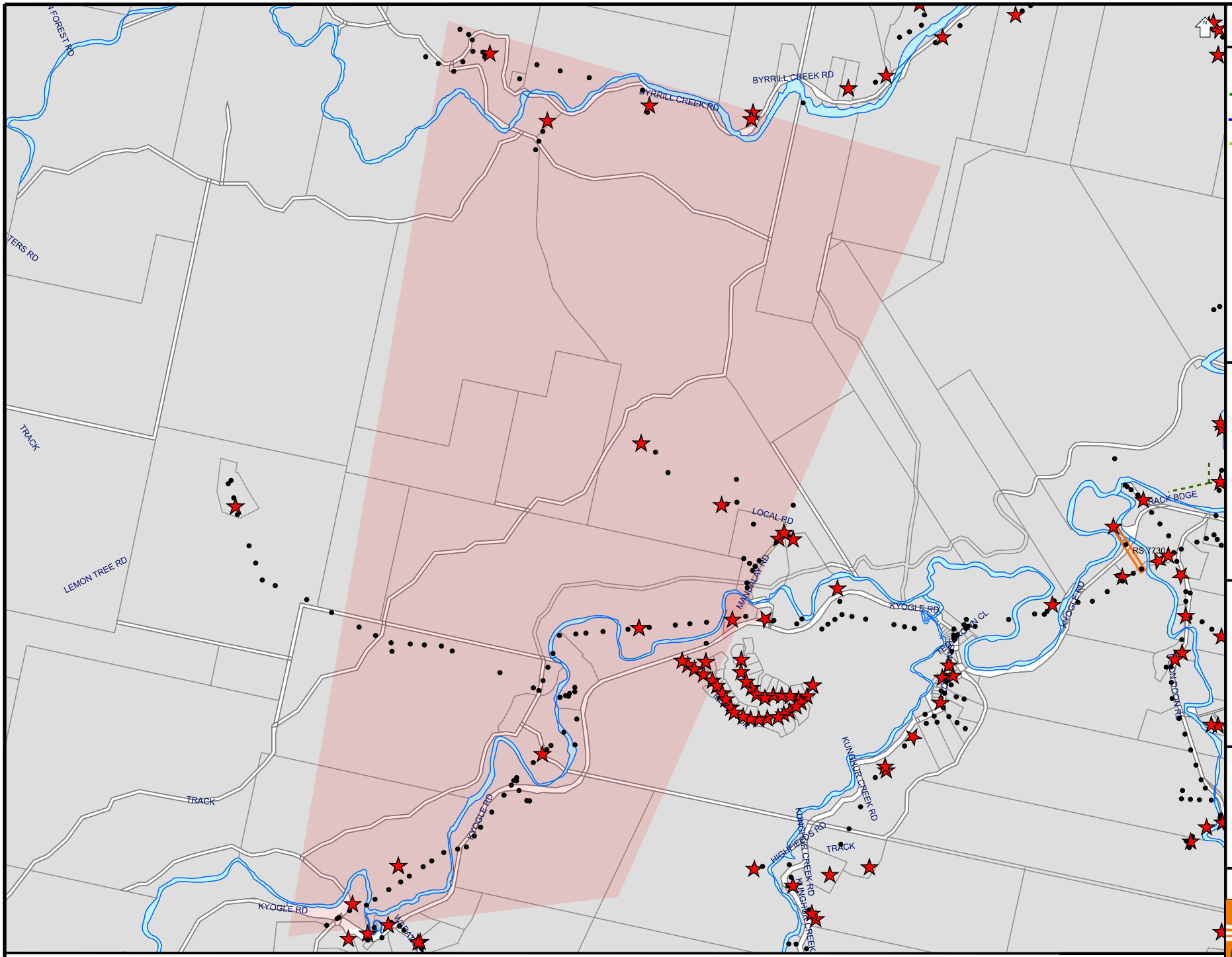
You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 | SCALE: 1:28302

essential energy

Job Number: 15765547 Sequence number: 80275523 Job location: 2954 Kyogle Road, Kunghur

Map Centre:



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- Underground Earth or Wires
- Ground Substation
- Pole
- Cubicle
- Pit
- Area of Interest

Critical Assets

Contact Essential Energy on 13 23 91

- Zone Substation
- Underground Cable
- Underground Fibre

Proposed Works

- Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 15/02/2019

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

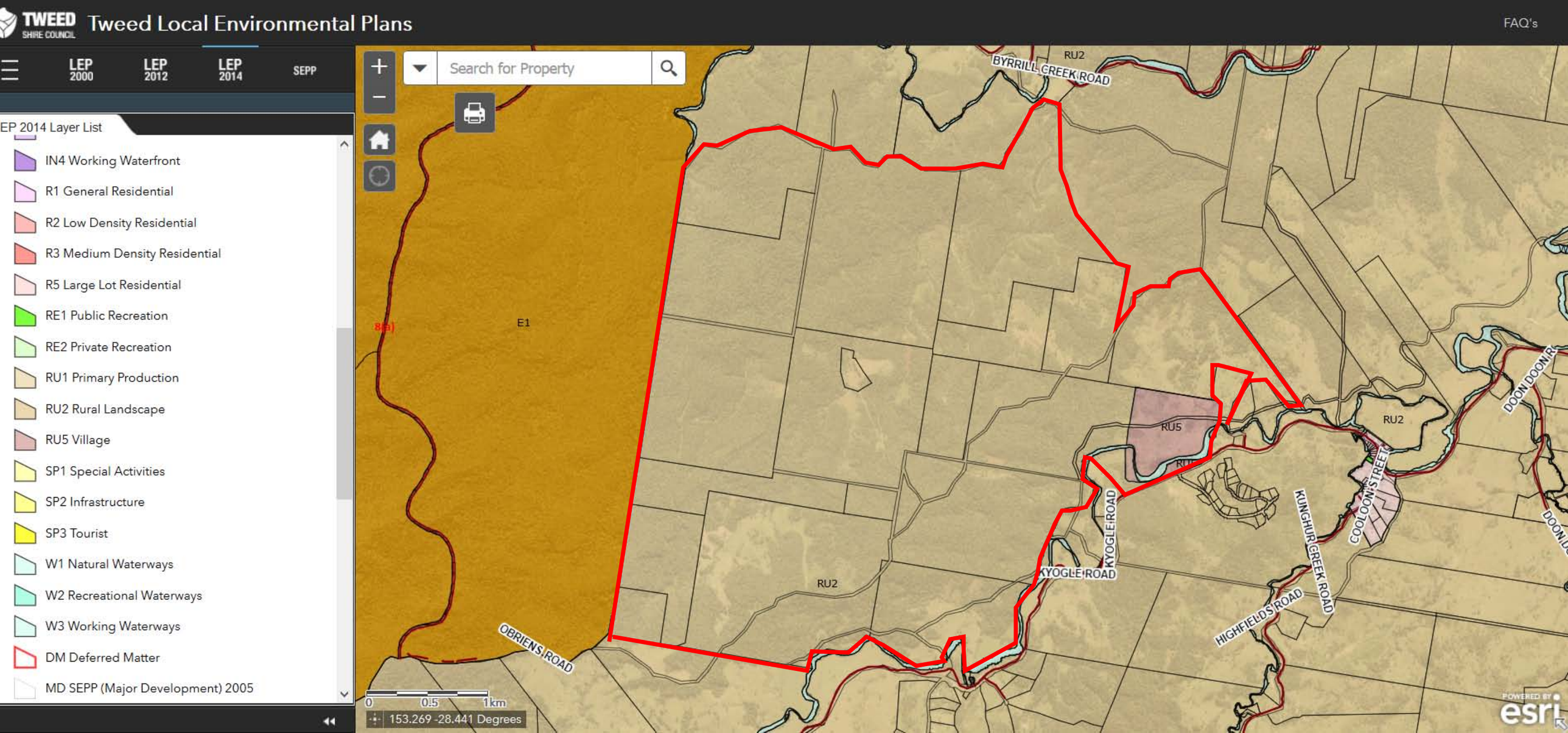
A4 | SCALE: 1:29418

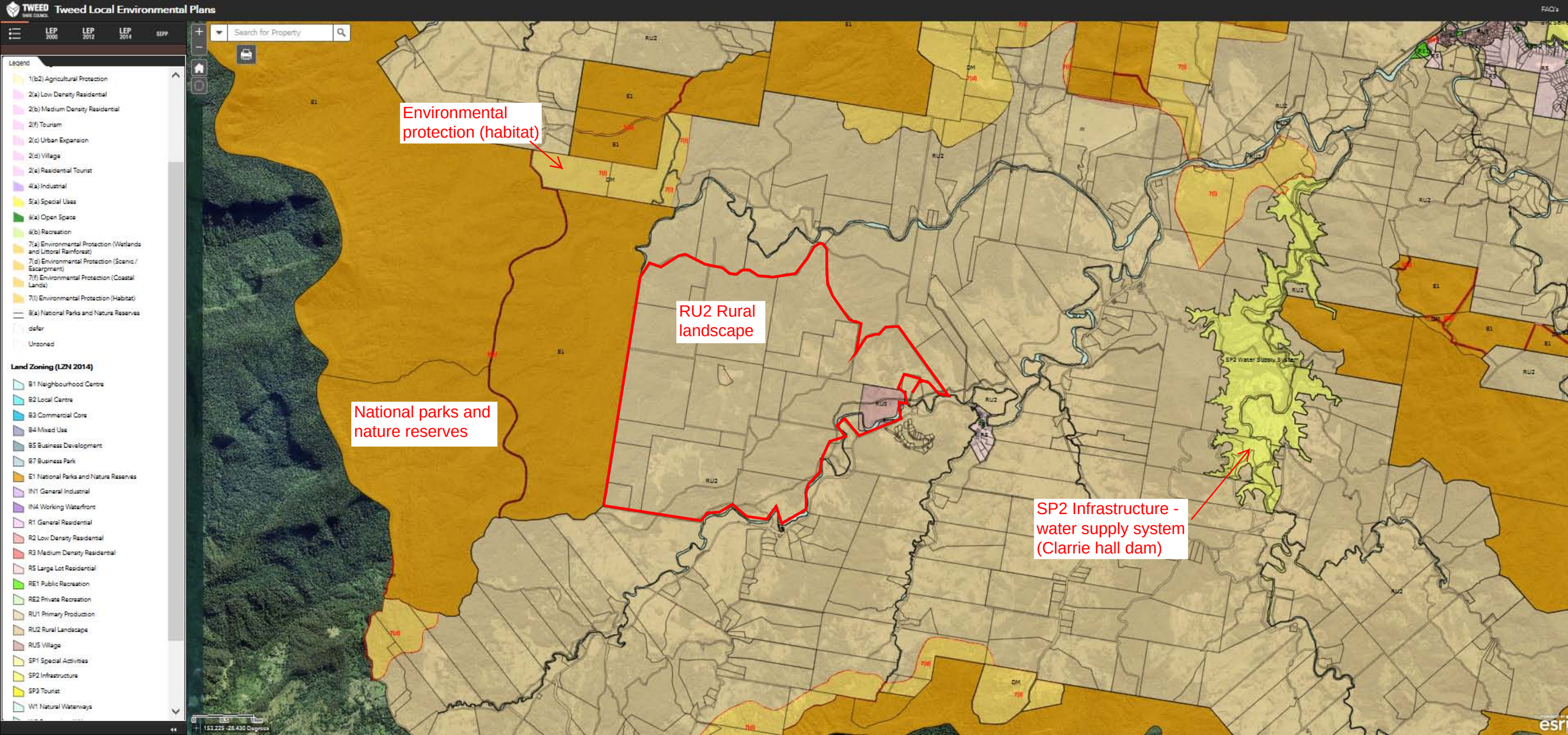
essential energy

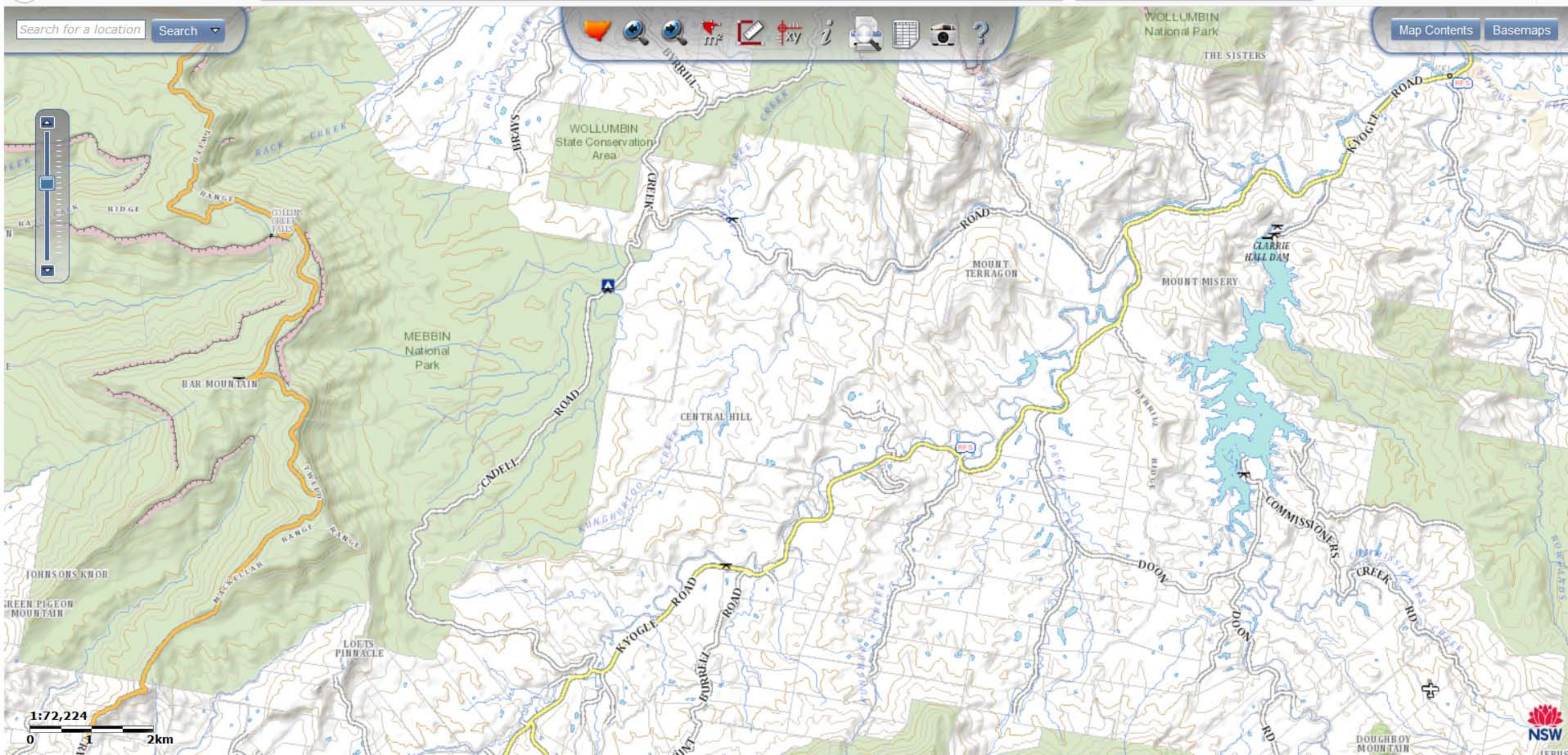
Job Number: 15765561 Sequence number: 80275605 Job location: 2954 Kyogle Road, Kunghur

Map Centre: 153° 13' 57.0", -28° 27' 46.0"

APPENDIX B: ENVIRONMENTAL MAPPING


TWEED SHIRE COUNCIL
Tweed Local Environmental Plans
FAQ's
LEP 2000
LEP 2012
LEP 2014
SEPP
EP 2014 Layer List
IN4 Working Waterfront
R1 General Residential
R2 Low Density Residential
R3 Medium Density Residential
R5 Large Lot Residential
RE1 Public Recreation
RE2 Private Recreation
RU1 Primary Production
RU2 Rural Landscape
RU5 Village
SP1 Special Activities
SP2 Infrastructure
SP3 Tourist
W1 Natural Waterways
W2 Recreational Waterways
W3 Working Waterways
DM Deferred Matter
MD SEPP (Major Development) 2005
Search for Property
E1
RU2
RU5
BYRRILL CREEK ROAD
KYOGLE ROAD
KUNGHUR CREEK ROAD
HIGHFIELDS ROAD
COOLOON ST
DOON DOON R
OBRIENS ROAD
0 0.5 1km
153.269 -28.441 Degrees
POWERED BY esri


Tweed Local Environmental Plans
FAQs
LEP 2000
LEP 2012
LEP 2014
SEPP
Search for Property
Legend
1(b2) Agricultural Protection
2(a) Low Density Residential
2(b) Medium Density Residential
2(f) Tourism
2(c) Urban Expansion
2(d) Village
2(e) Residential Tourist
4(a) Industrial
5(a) Special Uses
6(a) Open Space
6(b) Recreation
7(a) Environmental Protection (Wetlands and Littoral Rainforest)
7(d) Environmental Protection (Scenic / Escarpment)
7(f) Environmental Protection (Coastal Lands)
7(l) Environmental Protection (Habitat)
8(a) National Parks and Nature Reserves
defer
Unzoned
Land Zoning (LZN 2014)
B1 Neighbourhood Centre
B2 Local Centre
B3 Commercial Core
B4 Mixed Use
B5 Business Development
B7 Business Park
E1 National Parks and Nature Reserves
IN1 General Industrial
IN4 Working Waterfront
R1 General Residential
R2 Low Density Residential
R3 Medium Density Residential
R5 Large Lot Residential
RE1 Public Recreation
RE2 Private Recreation
RU1 Primary Production
RU2 Rural Landscape
RU5 Village
SP1 Special Activities
SP2 Infrastructure
SP3 Tourist
W1 Natural Waterways
Environmental protection (habitat)
RU2 Rural landscape
National parks and nature reserves
SP2 Infrastructure - water supply system (Clarrie hall dam)
SP2 Water Supply System
153.225 -28.430 Degrees
esri


Search for a location
Search
Map Contents
Basemaps
WOLLUMBIN National Park
THE SISTERS
WOLLUMBIN State Conservation Area
BRAYS CREEK
BYRRILL CREEK
KYOGLE ROAD
MOUNT TERRAGON
CLARRIE HALL DAM
MOUNT MISERY
MEBBIN National Park
BAR MOUNTAIN
CANDELL ROAD
CENTRAL HILL
COMMISSIONERS CREEK RD
DOON DOON
JOHNSONS KNOB
GREEN PIGEON MOUNTAIN
LOETS PINNACLE
DOUGHBOY MOUNTAIN
1:72,224
0 1 2km
NSW

Wollumbin Conservation Park
Cedar Creek (North)
Mebbin National Park
Terragon
Doon Doon Creek
Byrrill Creek
Byrrill Creek
Culters Camp Rd
Pine Plot Rd
Peg in Stump Rd
Forty spurs Rd
Cadell Rd
Plantation Rd
1000 m
1147 m
Clarrie Hall Dam
Rowlands Creek
Giwah Rd
Tweed River
Kunghur
Perch Creek
Kunghur Creek
Mebbin
Obrians Rd
Mount Burrell
Kunghur Creek
Midginbil
Commissioners Creek
Mount Burrell Rd
Kunghur Creek Rd
Midginbil Rd
Johnstons Creek Rd
Rockface Rd
Mount Jerusalem National Park
Doon Doon
1
2km
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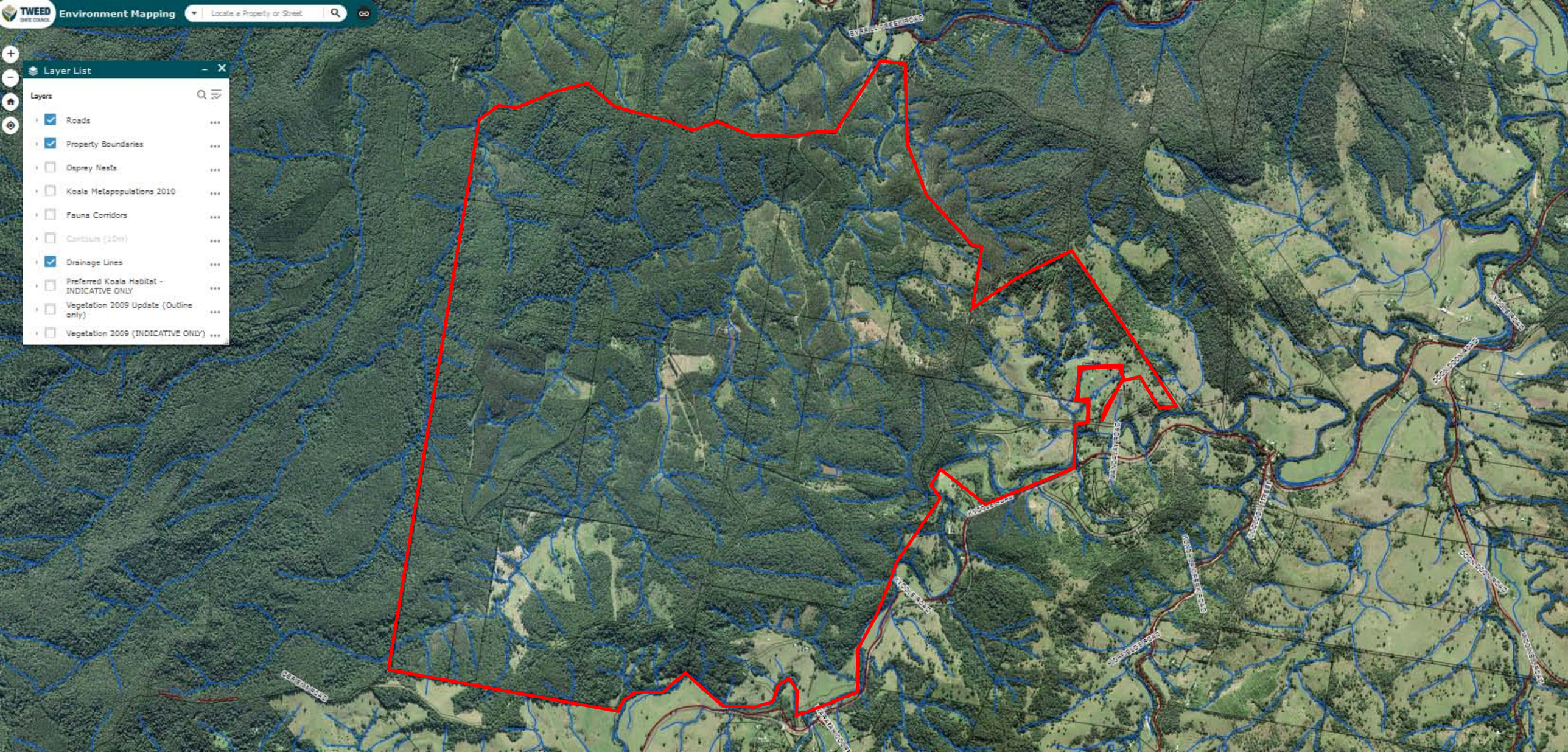
esri


TWEED
Environment Mapping
Locate a Property or Street
Layer List
Layers
Roads
Property Boundaries
Osprey Nests
Koala Metapopulations 2010
Fauna Corridors
Contours (10m)
Drainage Lines
Preferred Koala Habitat - INDICATIVE ONLY
Vegetation 2009 Update (Outline only)
Vegetation 2009 (INDICATIVE ONLY)

Tweed River Catchment

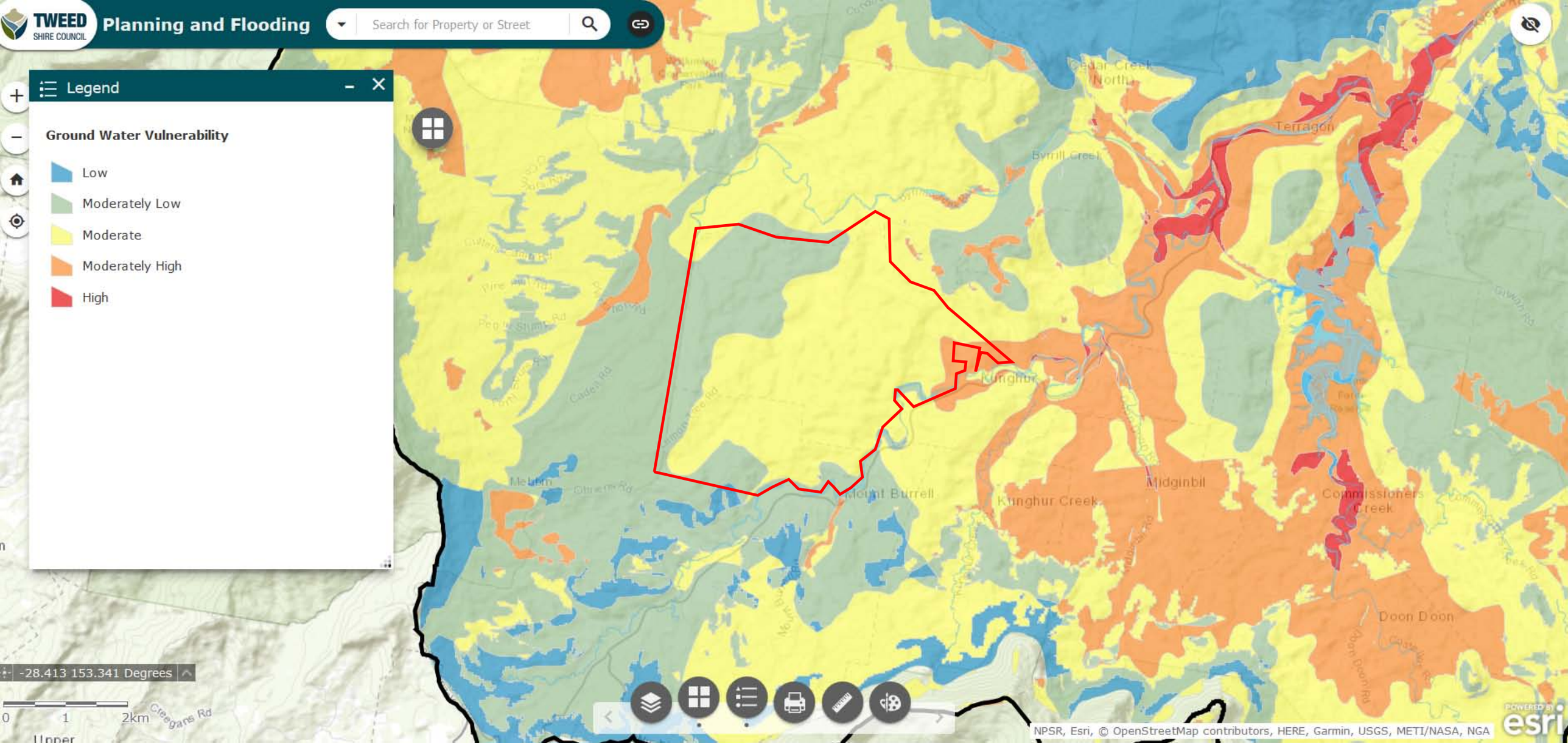
and small coastal creeks

TWEED HEADS
Cobaki Broadwater
FINGAL
Terranora Broadwater
GLENGARRIE
Cobaki Creek
Bilambil Creek
Duroby Creek
TERRANORA
CHINDERAH
KINGSCLIFF
Tweed Broadwater
TUMBULGUM
Tweed River
Cudgen Creek
CONDONG
Cudgen Lake
BOGANGAR
Hopping Dicks Creek
Rous River
Crystal Ck
Nobby Ck
CHILLINGHAM
MURWILLUMBAH
Bray Park Weir
Oxley River
TYALGUM
HASTINGS POINT
Christies Creek
Dunbible Creek
POTTSVILLE
Cudgera Creek
UKI
Smiths Creek
TERRAGON
BURRINGBAR
Mooball Creek
MOOBALL
WOOYUNG
Crabbes Creek
Byrrill Creek
Clarrie Hall Dam
Doon Doon Creek
Rotands Creek
Tweed River

Major weirs, storages
Major storages
Uncontrolled streams
Waterways affected by urban development
Estuaries
Town water supply subcatchments
National Parks, Nature Reserves & State Forests
Mainly forested areas

0 5 10 15 Kilometres

Prepared by NSW EPA's Remote Sensing / GIS Service


TWEED SHIRE COUNCIL
Planning and Flooding
Search for Property or Street
Legend
Ground Water Vulnerability
Low
Moderately Low
Moderate
Moderately High
High
Cedar Creek North
Terragon
Byrrill Creek
Kunghur
Midginbil
Kunghur Creek
Commissioners Creek
Mount Burrell
Doon Doon
Cades Rd
Creegans Rd
-28.413 153.341 Degrees
0
1
2km
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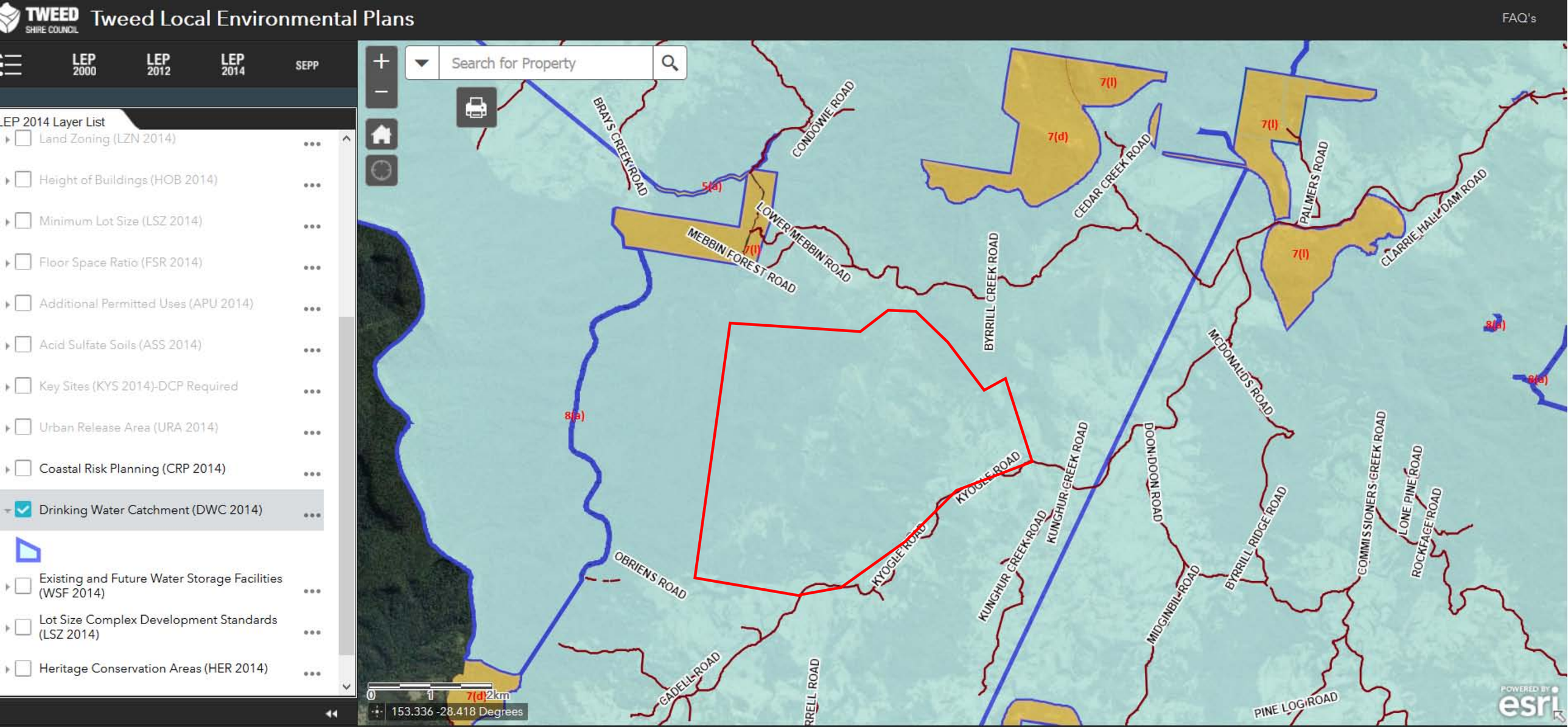
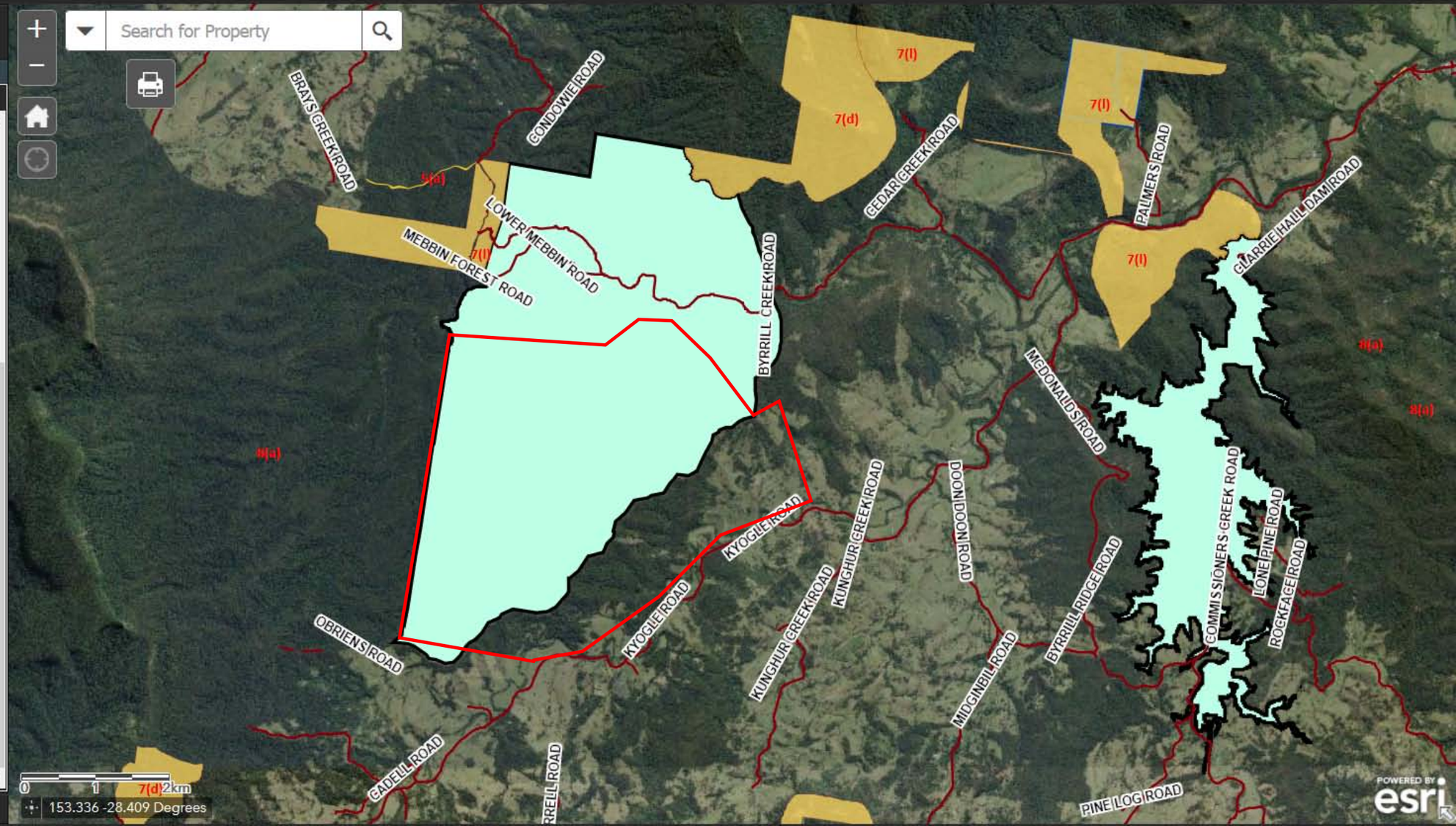
esri


TWEED SHIRE COUNCIL
Tweed Local Environmental Plans
FAQ's
LEP 2000
LEP 2012
LEP 2014
SEPP
LEP 2014 Layer List
Land Zoning (LZN 2014)
Height of Buildings (HOB 2014)
Minimum Lot Size (LSZ 2014)
Floor Space Ratio (FSR 2014)
Additional Permitted Uses (APU 2014)
Acid Sulfate Soils (ASS 2014)
Key Sites (KYS 2014)-DCP Required
Urban Release Area (URA 2014)
Coastal Risk Planning (CRP 2014)
Drinking Water Catchment (DWC 2014)
Existing and Future Water Storage Facilities (WSF 2014)
Lot Size Complex Development Standards (LSZ 2014)
Heritage Conservation Areas (HER 2014)
Search for Property
BRAYS CREEK ROAD
CONDOWIE ROAD
MEBBIN FOREST ROAD
LOWER MEBBIN ROAD
CEDAR CREEK ROAD
PALMERS ROAD
CLARRIE HALL DAM ROAD
BYRRILL CREEK ROAD
MCDONALDS ROAD
DOON DOON ROAD
KYOGLE ROAD
KUNGHUR CREEK ROAD
BYRRILL RIDGE ROAD
COMMISSIONERS CREEK ROAD
LONE PINE ROAD
ROCKFAGE ROAD
MIDGINEIL ROAD
OBRIENS ROAD
CADELL ROAD
PINE LOG ROAD
7(l)
7(d)
5(a)
8(a)
0 1 2km
153.336 -28.418 Degrees
POWERED BY esri

LEP 2014 Layer List

- Height of Buildings (HOB 2014)
- Minimum Lot Size (LSZ 2014)
- Floor Space Ratio (FSR 2014)
- Additional Permitted Uses (APU 2014)
- Acid Sulfate Soils (ASS 2014)
- Key Sites (KYS 2014)-DCP Required
- Urban Release Area (URA 2014)
- Coastal Risk Planning (CRP 2014)
- Drinking Water Catchment (DWC 2014)
- Existing and Future Water Storage Facilities (WSF 2014)
- Lot Size Complex Development Standards (LSZ 2014)
- Heritage Conservation Areas (HER 2014)
- Heritage Items (HER 2014)



About
Content
Legend
Legend
Vegetation 2009 (Update)
Estuarine Complexes
Foredune Complex
Heathlands
Highly Modified / Disturbed
Melaleuca and Swamp She-oak Forests
Miscellaneous Map Units
Rainforest and Riparian Communities
Sclerophyll Forests / Woodlands on Sand Substrates and Alluvium
Sclerophyll Open Forests on Bedrock Substrates
Sedgelands and Related Communities
WaterwaysTSC - Waterways
General site area
Esri.com
Help
Terms of Use
Privacy
Contact Esri
Report Abuse
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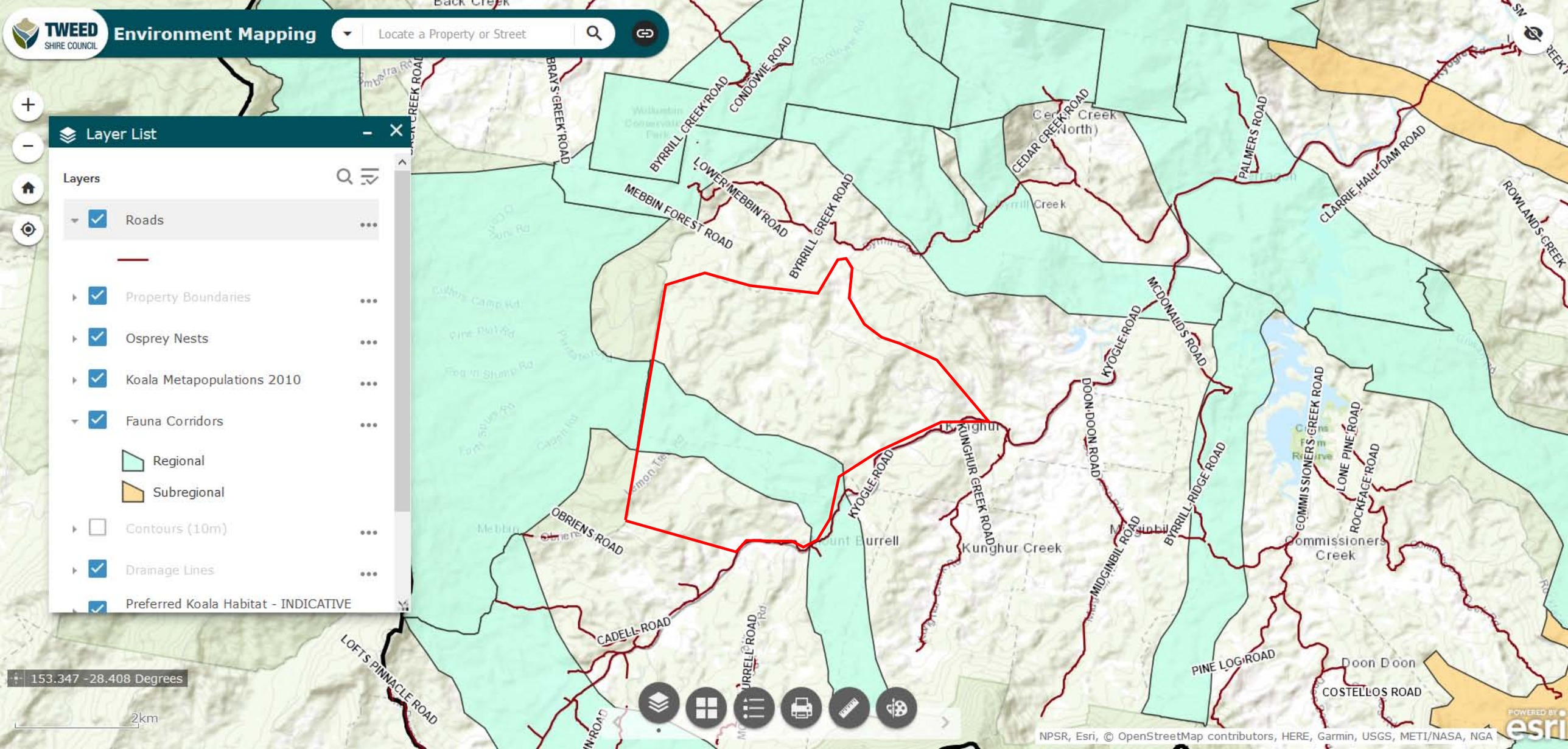
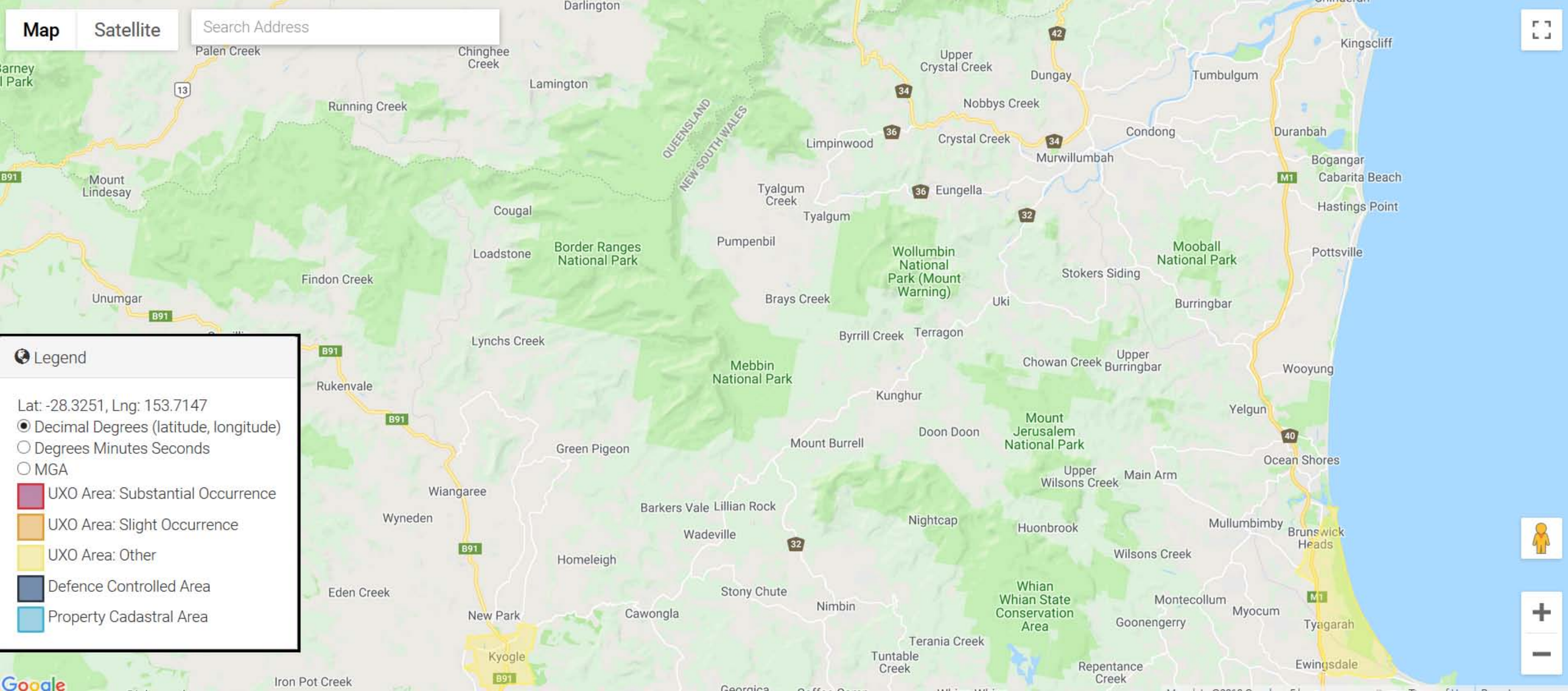
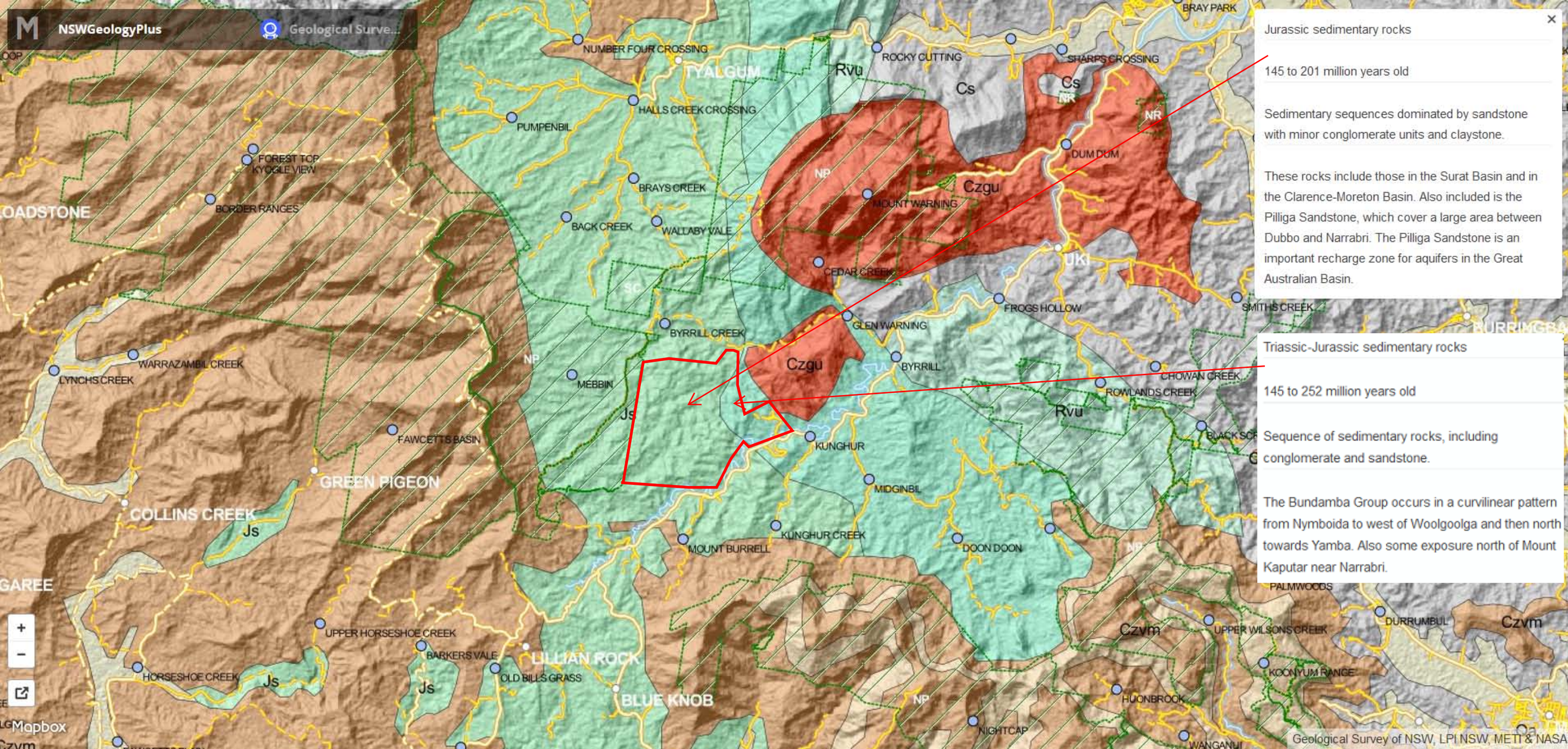
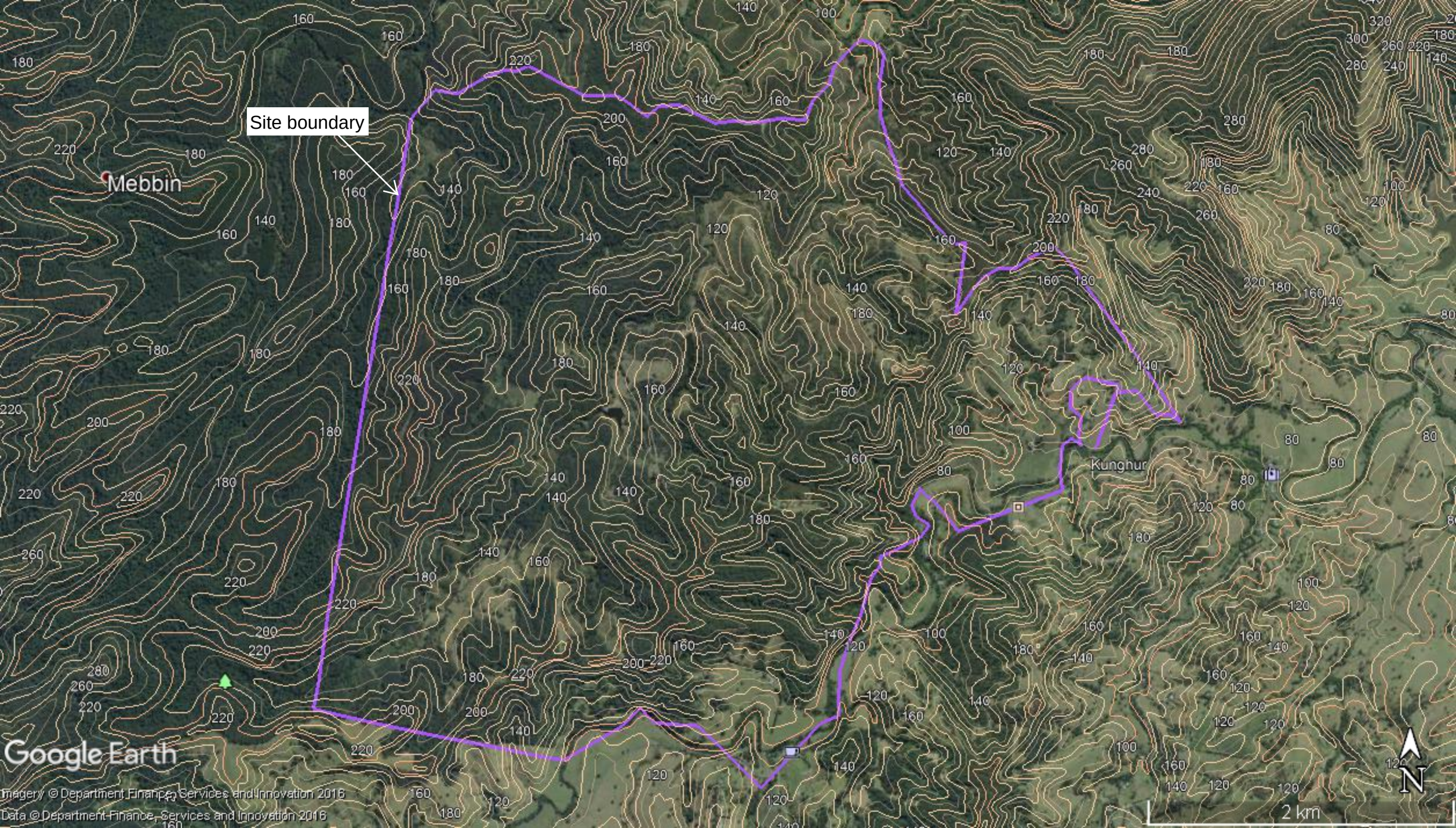

TWEED SHIRE COUNCIL
Environment Mapping
Locate a Property or Street
Layer List
Layers
Roads
Property Boundaries
Osprey Nests
Koala Metapopulations 2010
Fauna Corridors
Regional
Subregional
Contours (10m)
Drainage Lines
Preferred Koala Habitat - INDICATIVE
BYRRILL CREEK ROAD
CONDOWIE ROAD
BRAY'S CREEK ROAD
MEBBIN FOREST ROAD
LOWER MEBBIN ROAD
CEDAR CREEK ROAD
PALMER'S ROAD
CLARRIE HALL DAM ROAD
ROWLANDS CREEK
MCDONALD'S ROAD
KYOGLE ROAD
DOON DOON ROAD
KUNGHUR CREEK ROAD
BYRRILL RIDGE ROAD
COMMISSIONERS CREEK ROAD
LONE PINE ROAD
ROCKFACE ROAD
OBRIENS ROAD
CADELL ROAD
BURRELL ROAD
LOFTS PINNACLE ROAD
PINE LOG ROAD
COSTELLOS ROAD
Kunghur Creek
Commissioners Creek
Doon Doon
153.347 -28.408 Degrees
2km
NPSR, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, METI/NASA, NGA

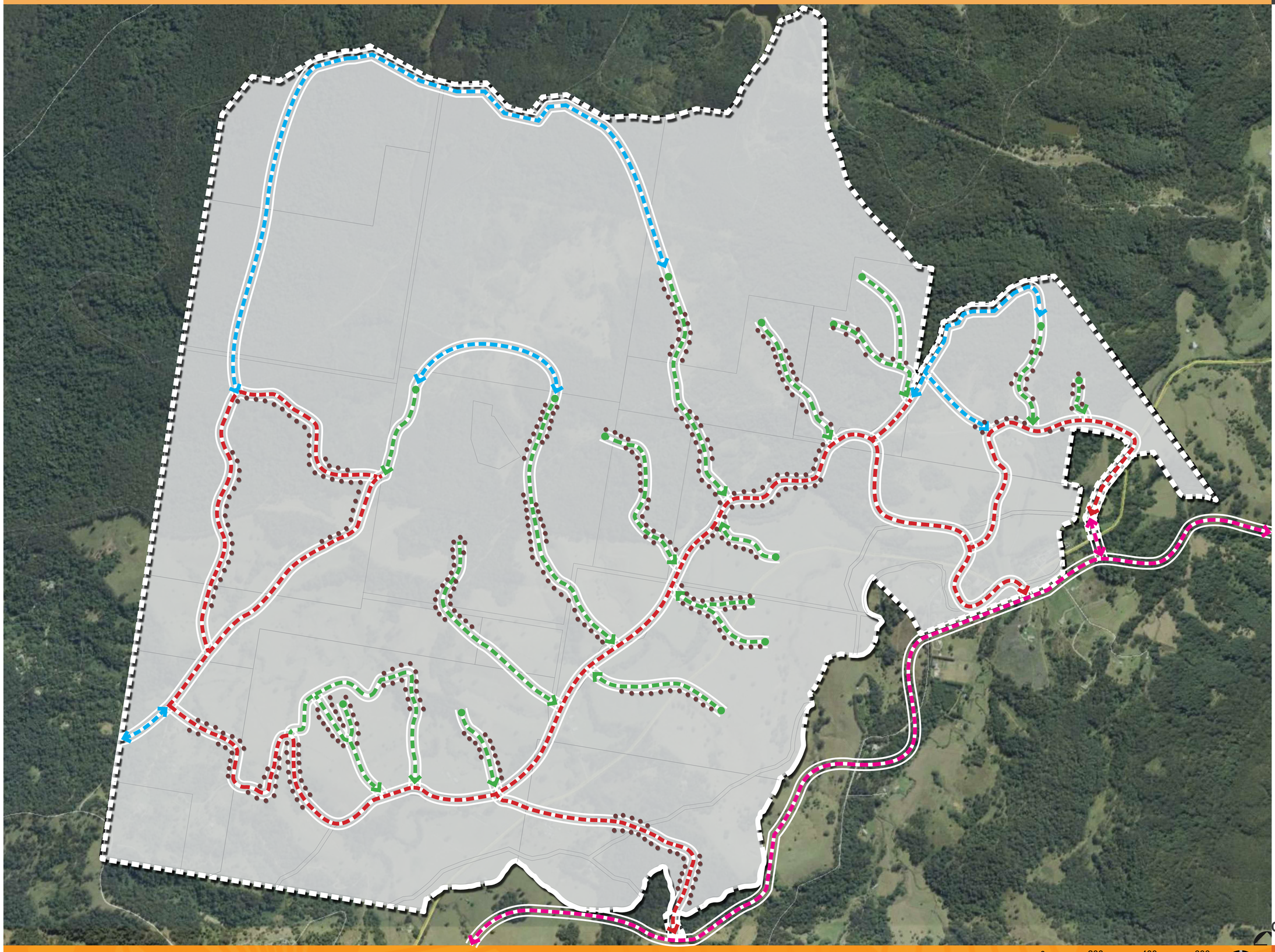

Map
Satellite
Search Address
Legend
Lat: -28.3251, Lng: 153.7147
Decimal Degrees (latitude, longitude)
Degrees Minutes Seconds
MGA
UXO Area: Substantial Occurrence
UXO Area: Slight Occurrence
UXO Area: Other
Defence Controlled Area
Property Cadastral Area
Darlington
Palen Creek
Chinghee Creek
Lamington
Running Creek
Upper Crystal Creek
Dungay
Kingscliff
Tumbulgum
Nobbys Creek
Limpinwood
Crystal Creek
Murwillumbah
Condong
Duranbah
Bogangar
Cabarita Beach
Hastings Point
Pottsville
Mount Lindesay
QUEENSLAND
NEW SOUTH WALES
Tyalgum Creek
Tyalgum
Eungella
Cougal
Pumpenbil
Loadstone
Border Ranges National Park
Wollumbin National Park (Mount Warning)
Mooball National Park
Stokers Siding
Findon Creek
Unumgar
Brays Creek
Uki
Burringbar
Byrrill Creek
Terragon
Lynchs Creek
Chowan Creek
Upper Burringbar
Wooyung
Mebbin National Park
Rukenvale
Kunghur
Yelgun
Mount Jerusalem National Park
Doon Doon
Mount Burrell
Green Pigeon
Ocean Shores
Upper Wilsons Creek
Main Arm
Wiangaree
Barkers Vale
Lillian Rock
Nightcap
Huonbrook
Mullumbimby
Brunswick Heads
Wyneden
Wadeville
Homeleigh
Wilsons Creek
Eden Creek
Stony Chute
Nimbin
Whian Whian State Conservation Area
Montecollum
Myocum
Tyagarah
New Park
Cawongla
Goonengerry
Terania Creek
Kyogle
Tuntable Creek
Repentance Creek
Ewingsdale
Iron Pot Creek
Google


NSWGeologyPlus
Geological Surve...
Jurassic sedimentary rocks
145 to 201 million years old
Sedimentary sequences dominated by sandstone with minor conglomerate units and claystone.
These rocks include those in the Surat Basin and in the Clarence-Moreton Basin. Also included is the Pilliga Sandstone, which cover a large area between Dubbo and Narrabri. The Pilliga Sandstone is an important recharge zone for aquifers in the Great Australian Basin.
Triassic-Jurassic sedimentary rocks
145 to 252 million years old
Sequence of sedimentary rocks, including conglomerate and sandstone.
The Bundamba Group occurs in a curvilinear pattern from Nymboida to west of Woolgoolga and then north towards Yamba. Also some exposure north of Mount Kaputar near Narrabri.
Rvu
Cs
Czgu
Js
Czvm
NP
NR
SC
NUMBER FOUR CROSSING
TYALGUM
HALLS CREEK CROSSING
PUMPENBIL
FOREST TOP
KYOGLE VIEW
BORDER RANGES
BRAYS CREEK
BACK CREEK
WALLABY VALE
ROCKY CUTTING
SHARPS CROSSING
DUM DUM
MOUNT WARNING
CEDAR CREEK
UKI
FROGS HOLLOW
SMITHS CREEK
GLEN WARNING
BYRRILL CREEK
BYRRILL
MEBBIN
CHOWAN CREEK
ROWLANDS CREEK
WARRAZAMBIL CREEK
LYNCHS CREEK
FAWCETTS BASIN
GREEN PIGEON
KUNGHUR
MIDGINBIL
COLLINS CREEK
KUNGHUR CREEK
MOUNT BURRELL
DOON DOON
PALMWOODS
DURRUMBUL
UPPER WILSONS CREEK
KOONYUM RANGE
UPPER HORSESHOE CREEK
BARKERS VALE
OLD BILLS GRASS
LILLIAN ROCK
BLUE KNOB
HORSESHOE CREEK
HUONBROOK
NIGHTCAP
WANGANUI
Mapbox
Geological Survey of NSW, LPI NSW, METI & NASA


Site boundary
Mebbin
Kunghur
Google Earth
Imagery © Department Finance, Services and Innovation 2016
Data © Department Finance, Services and Innovation 2016
N
2 km

APPENDIX C: CONSTRAINTS AND POSSIBLE DAM MAPPING

ROAD NETWORK ANALYSIS



LEGEND

- **PRIMARY ROADS**
  LOOP & ACCESS
- **SECONDARY ROADS**
  ACCESS & FEEDER ROADS
- **EXISTING INFORMAL LINKS**
  NO WORKS PROPOSED
- **PUBLIC ROADS**

PLANIT CONSULTING

0 200 400 600

SCALE - 1:10000 @ A1 , 1:20000 @ A3

NIGHTCAP ECO VILLAGE

CONSTRAINTS ANALYSIS

Date: NOVEMBER, 2019 **Drawn:** JW
Scale: 1:10000 @ A1 **Checked:** DM
Rev: 02